

**ABSTRACT OF THE DISCLOSURE**

A method for the deposition of a thin film of a pre-determined composition e.g. a phosphor, onto a substrate, in which the composition is a  
5 ternary, quaternary or higher composition, especially a composition selected from the group consisting of thioaluminates, thiogallates and thioindates of at least one element from Groups IIA and IIB of the Periodic Table. In the embodiment, the method comprises placing a pellet of at least one sulphide on a first source and placing a pellet of at least one sulphide on a second  
10 source, with one pellet containing dopant. Vapour deposition onto the substrate is effected with separate electron beams. The rate of vaporizing of the sulphides is monitored with separate shielded coating rate monitors. The temperature of the sources is controlled to obtain the composition on the substrate. The method is particularly used for deposition of ternary or  
15 quaternary phosphors on substantially opaque substrates in electroluminescent devices.